DOCUMENT RESUME

ED 347 171 TM 018 530

AUTHOR Arrigona, Daniel
TITLE Calculating Graduation Rates in Texas Schools. Research Report Number 1.
INSTITUTION Texas Education Agency, Austin. Dept. of Research and Development.
REPORT NO NE1-500-001
PUB DATE May 91
NOTE 20p.
AVAILABLE FROM Texas Education Agency, Publications Distribution, 1701 N. Congress Avenue, Austin, TX 78701-1494.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Accreditation (Institutions); *Cohort Analysis; *Computation; Educational Attainment; Excellence in Education; Grade Repetition; *Graduation; *High School Graduates; High Schools; High School Students; Management Information Systems; Nontraditional Education; *Public Schools; School Districts; *School Statistics; Student Attrition; Student Mobility
IDENTIFIERS Educational Indicators; *Texas; Texas Education Agency

ABSTRACT

High school graduation rates are conspicuous indicators of the relative successes of education systems, school districts, and high school campuses. Graduation rates are among the academic excellence indicators that will be used for the accreditation of school districts by the Texas Education Agency. This report discusses how high school graduation rates are calculated, what data are excluded from these calculations, and how these calculations can be improved. It examines data related to calculating graduation rates collected by the Texas Education Agency's Public Education Information Management System. The report recommends calculating a graduation rate by following a cohort of first-time ninth-grade students for a period of 6 years, including in the calculation student mobility, grade retention, and graduation from alternative education sites. Seven figures and 5 tables present data on Texas high school graduates, and there is a 14-item list of references. (Author/SLD)

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TEXAS EDUCATION AGENCY

RESEARCH REPORT

NUMBER 1

ED347171

PUBLISHED BY THE DEPARTMENT OF RESEARCH AND DEVELOPMENT

Calculating Graduation Rates in Texas Schools

by Daniel Arrigona

TM 018 530

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Calculating Graduation Rates in Texas Schools

by Daniel Arrigona

High school graduation rates are conspicuous indicators of the relative success of education systems, school districts, and high school campuses. This *Research Report* discusses how these rates are calculated, what data is excluded from these calculations, and how these calculations can be improved. It examines data related to calculating graduation rates collected by the Texas Education Agency. The report recommends calculating a graduation rate by following a cohort of first-time ninth grade students for a period of six years, including in the calculation student mobility, grade retention, and graduation from alternative education sites.

***Daniel Arrigona** is Educational Program Director in the Policy Research Clearinghouse of the Texas Education Agency's Department of Research and Development.*

Graduation rates follow a cohort of students from the ninth grade to their graduation from high school four years later.

High school graduation rates are conspicuous indicators of the relative success of education systems, school districts, and high school campuses. Published each year in such documents as the *Digest of Education Statistics* and the U.S. Secretary of Education's "Wall Chart" of state education performance, they are used to compare and rank states. The statistics reported in the "Wall Chart" are collected from the states as part of the National Center for Education Statistics' Common Core of Data survey. This survey is an annual accounting of public education facilities, students, and staff. The reported graduation rates follow a cohort of students from the ninth grade to their graduation from high school four years later. They compare the number of public school students in each state receiving regular high school diplomas with the ninth grade membership from the third year previous to the year of graduation. Figure 1 presents a summary of the rates reported in the 1989 "Wall Chart." Table 1 ranks the 15 most populous states by high school graduation rate for the 1988 school year.

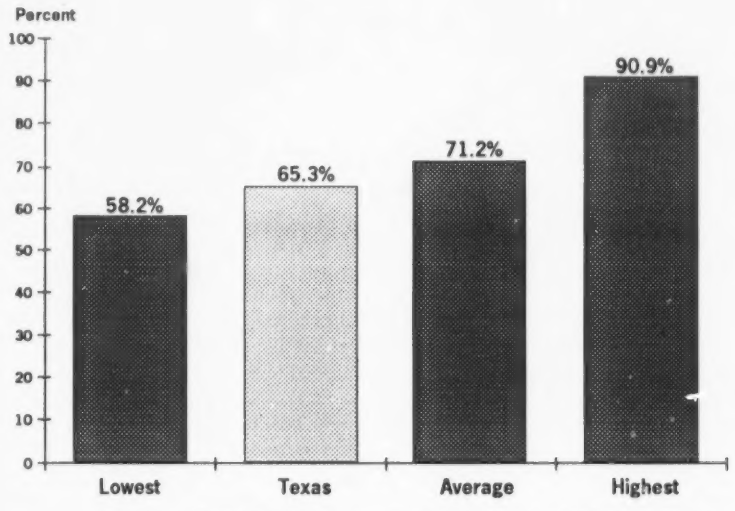


Figure 1: 1988 Graduation Rates Reported in the 1989 "Wall Chart"

How Are the Rates Calculated?

The Education Data Improvement Project's Task Force on High School Completion Rates states that a high school graduation rate can be calculated by dividing the number of regular diploma recipients by the number of ninth grade students in membership four years earlier (Clements 1990, p. 4). The National Center for Education Statistics calculates graduation rates in much the same manner, dividing the number of graduates for a given year by the enrollment of a ninth grade class three years earlier (Pallas and Verdugo, 1986). Toenjes (1989) calculates a "school success rate" as the inverse of, or 1 minus, a school's dropout rate. However, a number of authors caution against calculating one rate as the mirror image of another.

The base year population used in graduation rate measures can influence the rate ultimately calculated. A change in the divisor, reflecting a change in either the population or in the length of the study period, will lead to a change in the calculated rate. It is important to note that the dropout rates to which Toenjes refers are calculated by the Texas Education Agency for grades seven through twelve, rather than the grade nine through twelve rates measured with the Common Core data. The Texas Education Agency defines a longitudinal dropout rate as a count of students who drop out over a number of years divided by the number of students who enter school during a beginning year (State Board of Education, 1990).

What is Excluded From the Calculations?

According to the Council of Chief State School Officers, graduation rates such as those published in the "Wall Chart" underestimate the number of students who stay in school and complete a secondary education. They count regular high school diploma recipients but do not always track all categories of school completers. Varia-

Graduation rates often underestimate the number of students who stay in school and complete a secondary education.

TABLE 1:1988 Graduation Rates for the 15 Most Populous States
(Numbers in parentheses represent U.S. ranking.)

Ohio	79.6 (10)
Pennsylvania	78.4 (14)
New Jersey	77.4 (15)
Indiana	76.3 (19)
Illinois	75.6 (21)
Massachusetts	74.4 (25)
Missouri	74.0 (29)
Michigan	73.6 (30)
Virginia	71.6 (35)
U.S.	**71.2**
North Carolina	66.7 (41)
California	65.9 (42)
Texas	**65.3 (44)**
New York	62.3 (46)
Georgia	61.0 (49)
Florida	58.0 (51)

Source: State Education Performance Chart (Wall Chart), 1989

tions exist in how states define high school graduates. Students who receive diplomas from other than a regular school program, students who receive high school equivalency degrees, and students who receive a certificate of completion in lieu of a diploma may or may not be included in the state graduation counts submitted in the Common Core of Data survey. Thirteen states, including Texas, report only regular high school diploma recipients in their graduate data. The range in rates for these states as reported in the 1989 "Wall Chart" is summarized in Figure 2.

Sixteen states and the District of Columbia report both regular high school diploma and high school equivalency recipients (Clements, 1990). Including high school equivalency recipients in national graduate data raises the national high school completion rate by approximately four percent (Kaufman and Frase, 1990, p. 21). The other states count regular high school diploma recipients, high school equivalency recipients, and/or other school completers, including special education, course work without state credentials, adult education, and alternative programs.

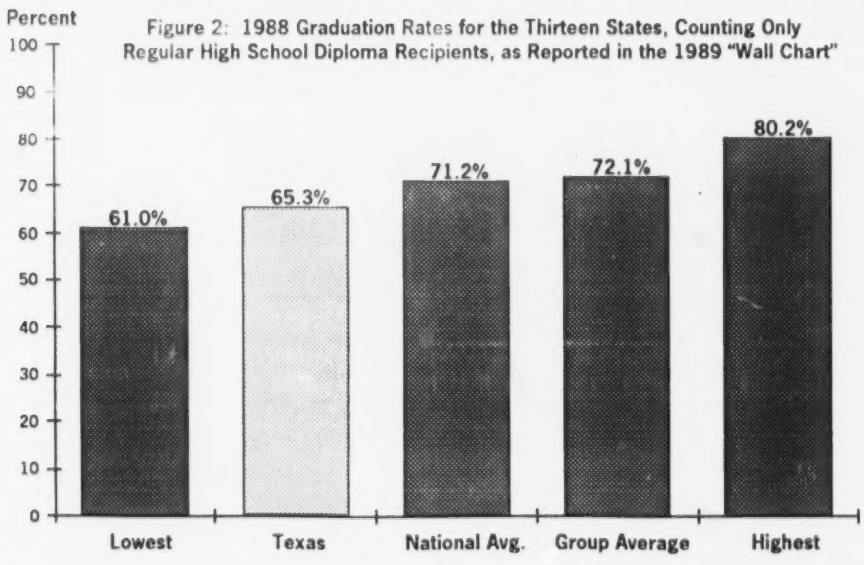
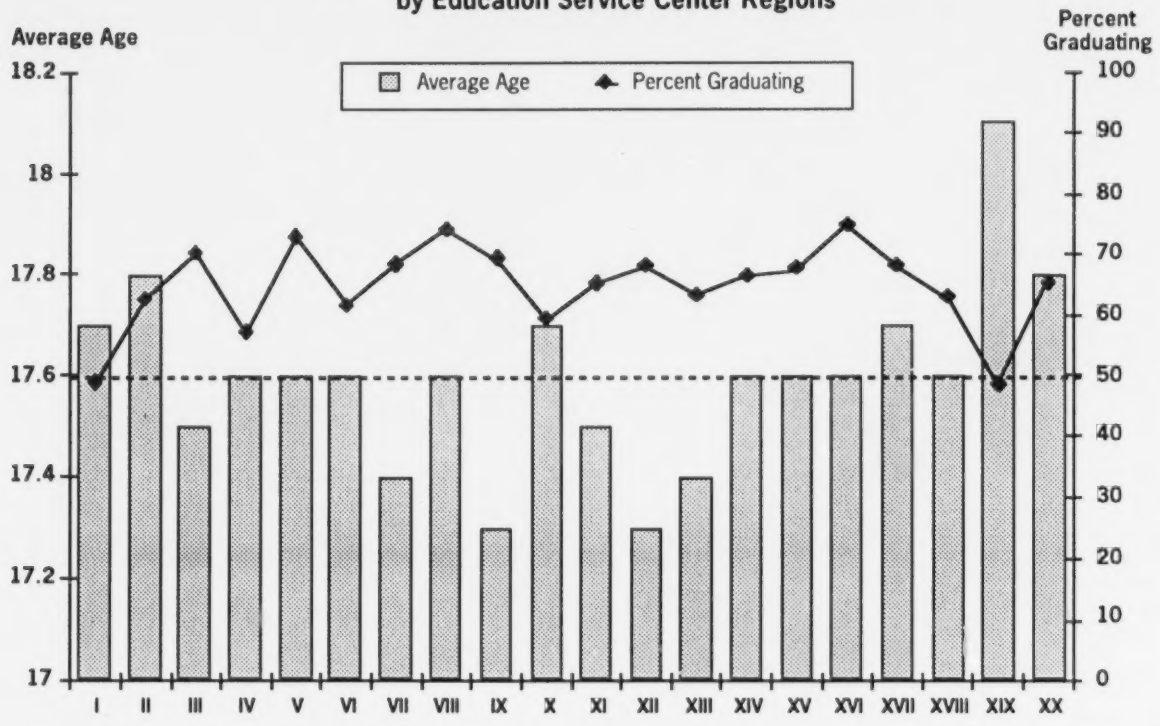


Figure 2: 1988 Graduation Rates for the Thirteen States, Counting Only Regular High School Diploma Recipients, as Reported in the 1989 "Wall Chart"

The assumption underlying most graduation rate calculations is that if students do not receive regular high school diplomas within a four-year high school career, they have dropped out of school. A criticism of these calculations is that they do not count those students who take more than four years to receive their high school diplomas. Figure 3 shows the average age of the 1989-90 high school graduates in the 20 education service cen-

Figure 3: 1989-90 Texas High School Graduation Rates by Education Service Center Regions



State Average Percentage of Graduates = 64.9%; State Average Age = 17.6 years

ter regions in Texas. Studies of national dropout rates (Kaufman and Frase, 1990; Pallas, 1988) found that as much as 14 percent of the nation's 18- to 19-year-olds were still in high school. For minorities this number is higher. Kaufman and Frase (1990, p. 18) report that nearly 25 percent of black and Hispanic 18- to 19-year-old males are enrolled in twelfth grade or below.

In a study for the National Center for Educational Statistics (Frase, 1989, p. 69), graduation rates were found to vary as much as 15 percent, depending on the cohort group analyzed. The highest cohort graduation rates reported in the study were associated with the percent of 18- to 19-year-olds who had either completed high school or were still enrolled below the college level. Graduation rates were substantially lower when calculated using only 18- to 19-year-olds who had received a school diploma, and even lower for the group of 17-year-old high school graduates counted as a percent of all 17-year-olds. The lowest graduation rates were calculated for the cohort that receives the most attention: those high school graduates who were in the ninth grade four years earlier. Table 2 shows the ages and total number of 1989-90 Texas high school graduates analyzed by various district groupings. Table 3 shows the percentage of 1989-90 Texas high school graduates completing school at different ages, using the same district groups. Figure 4 highlights ages of graduates as a percent of total graduates by district type.

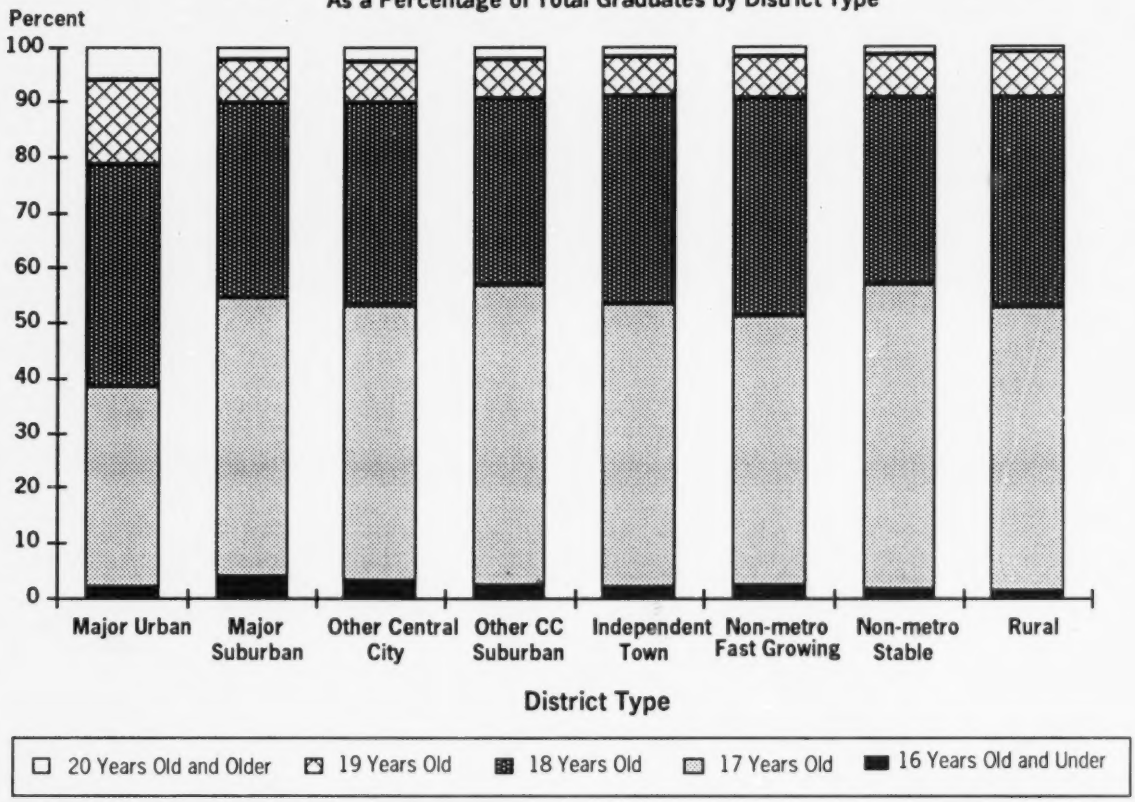
Another assumption underlying most graduation rate calculations is that grade retention rates are assumed to be constant. Doss and Sailor (1987) state that retention rates, particularly if they are not evenly distributed across all secondary grades, undermine the accuracy of cohort-based graduation studies. The problem of measuring the effect of retention on graduation rates is underscored by the fact that ninth grade is the first grade level in which

TABLE 2: 1989-90 Texas High School Graduates by Age

Number of Districts and ESC Regions			Graduates 16 and Under	Graduates 17 Years Old	Graduates 18 Years Old	Graduates 19 Years Old	Graduates 20 and Older	Total 89-90 Graduates	Average Age
34	I	EDINBURG	236	5,286	3,439	1,165	550	10, 676	17.7
34	II	CORPUS CHRISTI	94	2,362	2,273	717	215	5,661	17.8
33	III	VICTORIA	56	1,749	985	239	45	3,074	17.5
52	IV	HOUSTON	1,370	17,781	10,416	3,104	1,053	33,724	17.6
29	V	BEAUMONT	51	2,059	2,236	327	66	4,739	17.6
54	VI	HUNTSVILLE	147	2,796	1,713	493	106	5,255	17.6
94	VII	KILGORE	197	5,552	2,268	382	78	8,477	17.4
40	VIII	MT PLEASANT	34	1,413	1,411	282	31	3,171	17.6
38	IX	WICHITA FALLS	67	1,553	504	84	18	2,226	17.3
75	X	RICHARDSON	572	9,969	9,351	2,033	611	22,536	17.7
68	XI	FORT WORTH	423	8,094	5,555	1,117	255	15,444	17.5
71	XII	WACO	248	3,847	1,384	287	62	5,828	17.3
53	XIII	AUSTIN	467	5,652	3,109	583	192	10,003	17.4
44	XIV	ABILENE	24	1,172	1,111	212	29	2,548	17.6
40	XV	SAN ANGELO	95	1,369	1,052	233	80	2,829	17.6
60	XVI	AMARILLO	97	2,126	1,599	340	70	4,232	17.6
60	XVII	LUBBOCK	38	1,763	1,858	418	100	4,177	17.7
31	XVIII	MIDLAND	55	1,664	1,901	223	52	3,895	17.6
12	XIX	EL PASO	87	2,192	2,702	1,681	718	7,380	18.1
48	XX	SAN ANTONIO	375	6,281	7,430	1,866	560	16,512	17.8
District Type									
8		MAJOR URBAN	615	11,289	12,189	4,641	1,925	30,659	17.9
61		MAJOR SUBURBAN	2,074	26,104	18,046	4,214	1,143	51,581	17.5
23		OTHER CENTRAL CITY	722	10,565	7,771	1,643	539	21,240	17.6
73		OTHER CC SUBURBAN	342	7,873	4,842	1,055	320	14,432	17.5
65		INDEPENDENT TOWN	341	8,564	6,187	1,210	351	16,653	17.6
78		NON-METRO Fast Growing	113	2,469	1,980	375	106	5,043	17.6
271		NON-METRO Stable	413	13,411	8,076	1,950	387	24,237	17.5
391		RURAL	113	4,405	3,206	698	120	8,542	17.6
Percent Minority Pupils (State Average = 49.70%)									
92		Under 5%	72	2,503	1,709	276	35	4,595	17.5
115		5% to Under 10%	217	4,624	3,052	514	76	8,483	17.5
185		10% to Under 20%	803	12,843	6,680	1,219	243	21,788	17.4
137		20% to Under 30%	791	13,182	8,903	1,639	371	24,886	17.5
218		30% to Under 50%	956	19,135	14,618	2,951	698	38,358	17.6
223		50% and Over	1,894	32,393	27,335	9,187	3,468	74,277	17.7
APR Groups: Enroll /Wealth/ % Low Income									
177		<1K /< Avg/ <40%	86	3,293	1,969	324	52	5,724	17.5
174		<1K /< Avg/ >=40	72	2,223	1,617	453	86	4,451	17.6
93		<1K /> Avg/ <40%	39	1,266	851	173	30	2,359	17.5
72		<1K /> Avg/ >=40	27	699	454	145	28	1,353	17.6
90		1K to < 3K /< Avg/ <40%	133	4,938	2,891	541	88	8,591	17.5
84		1K to < 3K /< Avg/ >=40	118	4,286	2,557	702	160	7,823	17.6
41		1K to < 3K /> Avg/ <40%	71	2,031	1,588	239	47	3,976	17.5
25		1K to < 3K /> Avg/ >=40	33	1,112	788	178	34	2,145	17.6
64		3K to < 10K /< Avg/ <40%	431	8,515	5,545	1,030	221	15,742	17.5
37		3K to < 10K /< Avg/ >=40	236	4,973	3,510	947	313	9,979	17.6
35		3K to < 10K /> Avg/ <40%	330	6,265	2,389	442	117	9,543	17.3
4		3K to < 10K /> Avg/ >=40	24	413	380	94	34	945	17.7
22		>10K /< Avg/ < 40%	1,448	15,195	7,768	1,869	502	26,782	17.4
20		>10K /< Avg/ >=40	258	7,836	10,642	4,063	1,611	24,410	18.0
19		>10K /> Avg/ < 40%	863	12,472	10,706	2,011	492	26,544	17.6
7		>10K /> Avg/ >=40	562	9,075	8,476	2,535	1,057	21,705	17.8
6		Special Districts	2	88	166	40	19	315	18.0
970		STATE TOTAL	4,733	84,680	62,297	15,786	4,891	172,387	17.6

[See page 15 for detailed category definitions for Tables 2 thru 5.]

Figure 4: Texas High School Graduates for the 1989-90 School Year By Age As a Percentage of Total Graduates by District Type



students are required to pass courses in order to accumulate the 21 credits required by the state for graduation. According to LeCompte and Goebel (1987) the ninth grade class is larger than it should be if age alone were a consideration. Students are held back in the ninth grade to repeat courses until they have passed a specified number of requirements for reclassification into a higher grade.

In Texas, there is a bulge both in ninth grade attendance and dropout rates. In 1988-89, the state-wide dropout rate was 6.1 percent; for the ninth grade it was 9.1 percent (Texas Education Agency, 1990a, p. 3). Figure 5, reflecting data collected by the Texas Education Agency Public Education Information Management System (PEIMS) for spring 1990 fiscal year, shows the number of overage students in eighth, ninth, and tenth grades in Texas. In the 1989-90 school year, the ninth grade population was more than 13 percent greater than the 1988-89 eighth grade. In 1988-89, there were 236,950 eighth graders in Texas. In the 1989-90 school year there were 269,460 ninth graders. Even with the assumption that all of the 1988-89 eighth graders moved to ninth grade in 1989-90, there were nearly 30,000 students who did not join their peers in moving to the tenth grade in 1989-90 school year. Table 4 expands upon these statistics, with an analysis of the average ages of Texas eighth, ninth, and tenth grade students by district groups. Overage students and those who have been retained and are not

TABLE 3: 1989-90 Texas High School Graduates by Age as a Percent of Total Graduates

Number of Districts and ESC Regions	Graduates 16 and Under	Graduates 17 Years Old	Graduates 18 Years Old	Graduates 19 Years Old	Graduates 20 and Older	Total 89-90 Graduates	Average Age
34 I EDINBURG	2.2	49.5	32.2	10.9	5.2	10,676	17.7
34 II CORPUS CHRISTI	1.7	41.7	40.2	12.7	3.8	5,661	17.8
33 III VICTORIA	1.8	56.9	32.0	7.8	1.5	3,074	17.5
52 IV HOUSTON	4.1	52.7	30.9	9.2	3.1	33,724	17.6
29 V BEAUMONT	1.1	43.4	47.2	6.9	1.4	4,739	17.6
54 VI HUNTSVILLE	2.8	53.2	32.6	9.4	2.0	5,255	17.6
94 VII KILGORE	2.3	65.5	26.8	4.5	0.9	8,477	17.4
40 VIII MT PLEASANT	1.1	44.6	44.5	8.9	1.0	3,171	17.6
38 IX WICHITA FALLS	3.0	69.8	22.6	3.8	0.8	2,226	17.3
75 X RICHARDSON	2.5	44.2	41.5	9.0	2.7	22,536	17.7
68 XI FORT WORTH	2.7	52.4	36.0	7.2	1.7	15,444	17.5
71 XII WACO	4.3	66.0	23.7	4.9	1.1	5,828	17.3
53 XIII AUSTIN	4.7	56.5	31.1	5.8	1.9	10,003	17.4
44 XIV ABILENE	0.9	46.0	42.5	8.3	1.1	2,548	17.6
40 XV SAN ANGELO	3.4	48.4	37.2	8.2	2.8	2,829	17.6
60 XVI AMARILLO	2.3	50.2	37.8	8.0	1.7	4,232	17.6
60 XVII LUBBOCK	0.9	42.2	44.5	10.0	2.4	4,177	17.7
31 XVIII MIDLAND	1.4	42.7	48.8	5.7	1.3	3,895	17.6
12 XIX EL PASO	1.2	29.7	36.6	22.8	9.7	7,380	18.1
48 XX SAN ANTONIO	2.3	38.0	45.0	11.3	3.4	16,512	17.8
District Type							
8 MAJOR URBAN	2.0	36.8	39.8	15.1	6.3	30,659	17.9
61 MAJOR SUBURBAN	4.0	50.6	35.0	8.2	2.2	51,581	17.5
23 OTHER CENTRAL CITY	3.4	49.7	36.6	7.7	2.5	21,240	17.6
73 OTHER CC SUBURBAN	2.4	54.6	33.6	7.3	2.2	14,432	17.5
65 INDEPENDENT TOWN	2.0	51.4	37.2	7.3	2.1	16,653	17.6
78 NON-METRO Fast Growing	2.2	49.0	39.3	7.4	2.1	5,043	17.6
271 NON-METRO Stable	1.7	55.3	33.3	8.0	1.6	24,237	17.5
391 RURAL	1.3	51.6	37.5	8.2	1.4	8,542	17.6
Percent Minority Pupils (State Average = 49.70%)							
92 Under 5%	1.6	54.5	37.2	6.0	0.8	4,595	17.5
115 5% to Under 10%	2.6	54.5	36.0	6.1	0.9	8,483	17.5
185 10% to Under 20%	3.7	58.9	30.7	5.6	1.1	21,788	17.4
137 20% to Under 30%	3.2	53.0	35.8	6.6	1.5	24,886	17.5
218 30% to Under 50%	2.5	49.9	38.1	7.7	1.8	38,358	17.6
223 50% and Over	2.5	43.6	36.8	12.4	4.7	74,277	17.7
APR Groups: Enroll /Wealth/ % Low Income							
177 <1K /< Avg/ <40%	1.5	57.5	34.4	5.7	0.9	5,724	17.5
174 <1K /< Avg/ >=40	1.6	49.9	36.3	10.2	1.9	4,451	17.6
93 <1K /> Avg/ <40%	1.7	53.7	36.1	7.3	1.3	2,359	17.5
72 <1K /> Avg/ >=40	2.0	51.7	33.6	10.7	2.1	1,353	17.6
90 1K to < 3K /< Avg/ <40%	1.5	57.5	33.7	6.3	1.0	8,591	17.5
84 1K to < 3K /< Avg/ >=40	1.5	54.8	32.7	9.0	2.0	7,823	17.6
41 1K to < 3K /> Avg/ <40%	1.8	51.1	39.9	6.0	1.2	3,976	17.5
25 1K to < 3K /> Avg/ >=40	1.5	51.8	36.7	8.3	1.6	2,145	17.6
64 3K to < 10K /< Avg/ <40%	2.7	54.1	35.2	6.5	1.4	15,742	17.5
37 3K to < 10K /< Avg/ >=40	2.4	49.8	35.2	9.5	3.1	9,979	17.6
35 3K to < 10K /> Avg/ <40%	3.5	65.7	25.0	4.6	1.2	9,543	17.3
4 3K to < 10K /> Avg/ > 40	2.5	43.7	40.2	9.9	3.6	945	17.7
22 >10K /< Avg/ < 40%	5.4	56.7	29.0	7.0	1.9	26,782	17.4
20 >10K /< Avg/ >=40	1.1	32.1	43.6	16.6	6.6	24,410	18.0
19 >10K /> Avg/ < 40%	3.3	47.0	40.3	7.6	1.9	26,544	17.6
7 >10K /> Avg/ >=40	2.6	41.8	39.1	11.7	4.9	21,705	17.8
6 Special Districts	0.6	7.9	52.7	12.7	6.0	315	18.0
970 STATE TOTAL	2.7	49.1	36.1	9.2	2.8	172,387	17.6

Graduation rates should account for extended time periods for high school completion, student retention, and mobility.

expected to graduate within four years of entering the ninth grade are among those identified as at-risk by the Texas Administrative Code. Retained students that remain in high school would not be accurately counted in a graduation calculation assuming a four-year high school period.

The cohort studies mentioned above do not accurately account for students who transfer into or out of a school system after the ninth grade. Intra- and inter-district transfers have not yet been included in any collection of student data by the Texas Education Agency. The Intercultural Development Research Association included a measure of student mobility in the formulation of a longitudinal attrition rate. This rate measured the number of ninth grade students who did not complete their high school education on time over a number of years. A "district size change ratio" was computed by dividing the total high school enrollment in the end year of the study by the high school enrollment in the study base year (Intercultural Development Research Association, 1986, p. 5).

Dropouts who return to school to complete their education are also under-reported in the cohort studies. Frase (1989, p. 34) estimates that 46 percent of high school dropouts return to school within four years of their cohort class's expected graduation date. Pallas (1987, p. 1) estimates that 40 percent of high school dropouts subsequently return to the educational system. High school completers, those students who receive a high school equivalency certificate instead of a diploma, comprise another group not counted in these studies.

Improving Graduation Rate Calculations

The Task Force on High School Completion Rates recommends the review of various grade levels as the cohort for computing graduation and other completion rates. Information such as retention patterns, migration, state graduation requirements, and other related data should be considered. An ideal graduation rate would take into account extended time periods for high school completion, student retention, and mobility. The task force suggests two different methods of computing graduation rates that control for retention and overage students. The first uses the average of the enrollment in grades eight through ten as a base year population; the second compares high school graduates to students who were first-time ninth graders four years earlier (Clements, 1990, p. 15). Doss and Sailor, in their study of dropout

FIGURE 5: Percent Overage 1 or More Years, By Grade and Ethnicity — Texas Education Agency Public Education Information Management System (PEIMS) Data, Spring, Fiscal Year 1990

	Grade 8			Grade 9			Grade 10		
Ethnicity	Total Enrollment	Number Overage	Percent	Total Enrollment	Number Overage	Percent	Total Enrollment	Number Overage	Percent
Black	28,094	9,788	35%	32,788	14,643	45%	26,147	10,145	39%
Hispanic	70,968	28,735	40%	79,651	38,806	49%	59,815	25,906	43%
Other	4,940	1,319	27%	5,611	2,067	37%	4,878	1,706	35%
White	107,696	20,656	19%	115,004	26,566	23%	102,985	21,112	21%
TOTAL	**211,698**	**60,498**	**29%**	**233,054**	**82,082**	**35%**	**193,826**	**58,869**	**30%**

Graduation rates are among the academic excellence indicators that will be used for school district accreditation.

TABLE 4: Average Age of Texas Students by Grade — 1989-90 Original Entries

Number of Districts and ADA Groupings	Grade 8 Average Age	Grade 9 Average Age	Grade 10 Average Age	Grades 8 - 10 Average Age
8 MAJOR URBAN	13.5	14.9	15.7	14.7
61 MAJOR SUBURBAN	13.3	14.5	15.4	14.4
23 OTHER CENTRAL CITY	13.4	14.6	15.5	14.5
74 OTHER CC SUBURBAN	13.4	14.6	15.5	14.5
65 INDEPENDENT TOWN	13.4	14.5	15.5	14.4
82 NON-METRO Fast Growing	13.4	14.5	15.4	14.5
271 NON-METRO Stable	13.4	14.5	15.4	14.4
474 RURAL	13.4	14.5	15.4	14.4
Wealth By Equal RADA Per Group				
25 Under $51,611	13.6	14.9	15.8	14.7
70 $51,611 to < $79,599	13.5	14.7	15.6	14.5
75 $79,599 to < $93,431	13.4	14.6	15.5	14.5
113 $93,431 to < $111,174	13.5	14.7	15.5	14.5
82 $111,174 to < $124,674	13.4	14.7	15.6	14.5
56 $124,674 to < $133,840	13.4	14.6	15.5	14.5
63 $133,840 to < $147,075	13.4	14.6	15.5	14.5
40 $147,075 to < $156,339	13.4	14.5	15.5	14.5
32 $156,339 to < $163,010	13.3	14.5	15.4	14.4
39 $163,010 to < $174,981	13.4	14.5	15.5	14.5
58 $174,981 to < $190,253	13.3	14.5	15.4	14.4
49 $190,253 to < $206,247	13.3	14.5	15.4	14.4
29 $206,247 to < $217,719	13.3	14.6	15.5	14.5
48 $217,719 to < $244,860	13.3	14.5	15.4	14.4
41 $244,860 to < $268,755	13.3	14.4	15.4	14.4
1 $268,755 to < $269,138	13.8	15.2	15.9	14.9
33 $269,138 to < $298,578	13.3	14.4	15.3	14.3
53 $298,578 to < $367,048	13.4	14.7	15.5	14.5
13 $367,048 to < $388,497	13.4	14.7	15.5	14.5
132 $388,497 and Over	13.3	14.4	15.4	14.3
6 Special Districts	13.3	14.2	15.3	14.4

rates for the Austin Independent School District, concur with the second approach. However, they caution that it is based on two unlikely premises: that student in- and out-migration balance each other and that retention rates remain stable over time. Collecting data for the second calculation would be more difficult than current methods of collecting and reporting Texas ninth grade enrollment and high school graduation data. A third approach to calculating graduation rates, accounting for summer graduates and late enrollees, calculates graduation and dropout rates over a 12-month school year that begins with the start of school in the fall (Frase, 1989, p. 77).

Table 5 provides 1989-90 graduation rates for Texas. The rates, analyzed by district groups and standardized to 70.0 for purposes of comparison, are calculated using ninth grade as the base year population, the ninth grade base population adjusted for district growth, and a base year population that averages the enrollment in grades eight through ten. A school success rate, calculated as the inverse of a district's dropout rate for the years 1988-89, is also included in the table. Figure 6 highlights these four methods of calculating graduation rates by district size. Figure 7 illustrates the calculation methods by rates of district growth.

Other studies, including the *High School and Beyond* longitudinal survey of 1982 high school sophomores and the Bureau of the Census' *Current Population Survey*, follow students after the expected graduation dates of their class. The Task Force on High School Completion Rates recommends a long-term analysis of completion rates using a cross-sectional survey of people through age 24 who completed a secondary school program in a given year.

Elements of a Graduation Rate in Texas

The Texas Education Agency Public Education Information Management System (PEIMS) collects data for all public school students in the state. Prior to the 1989-90 school year, school district, campus, and grade

TABLE 4: Average Age of Texas Students by Grade — 1989-90 Original Entries (continued)

Number of Districts and ESC Regions			Grade 8 Average Age	Grade 9 Average Age	Grade10 Average Age	Grades 8-10 Average Age
38	I	EDINBURG	13.6	14.9	15.7	14.7
44	II	CORPUS CHRISTI	13.4	14.6	15.6	14.5
41	III	VICTORIA	13.4	14.6	15.4	14.4
55	IV	HOUSTON	13.5	14.8	15.6	14.6
29	V	BEAUMONT	13.3	14.5	15.4	14.4
57	VI	HUNTSVILLE	13.4	14.5	15.5	14.5
98	VII	KILGORE	13.3	14.5	15.4	14.4
48	VIII	MT PLEASANT	13.3	14.4	15.3	14.3
40	IX	WICHITA FALLS	13.3	14.3	15.3	14.3
79	X	RICHARDSON	13.3	14.6	15.4	14.4
77	XI	FORT WORTH	13.3	14.5	15.4	14.4
78	XII	WACO	13.4	14.5	15.4	14.4
56	XIII	AUSTIN	13.3	14.6	15.4	14.4
47	XIV	ABILENE	13.3	14.4	15.4	14.4
45	XV	SAN ANGELO	13.4	14.5	15.5	14.5
69	XVI	AMARILLO	13.4	14.5	15.4	14.4
61	XVII	LUBBOCK	13.4	14.5	15.5	14.4
33	XVIII	MIDLAND	13.4	14.5	15.5	14.5
13	XIX	EL PASO	13.4	14.7	15.7	14.6
50	XX	SAN ANTONIO	13.4	14.6	15.5	14.5
RADA Change: 88/89-89/90 (State Average = 1.57%)						
114		Under 5%	13.3	14.4	15.4	14.3
123		5% to under 10%	13.3	14.4	15.3	14.3
202		10% to under 20%	13.3	14.4	15.3	14.3
143		20% to under 30%	13.3	14.4	15.4	14.3
230		30% to under 50%	13.4	14.5	15.5	14.4
246		50% and Over	13.5	14.8	15.6	14.6
Percent Minority Pupils (State Average = 49.70%)						
153		Under 20%	13.2	14.4	15.3	14.3
212		20% to under 30%	13.3	14.5	15.4	14.4
225		30% to under 40%	13.4	14.6	15.5	14.5
295		40% to under 60%	13.5	14.8	15.6	14.6
118		60% to under 80%	13.5	14.8	15.7	14.6
55		80% and Over	13.6	14.9	15.7	14.7
1,058		STATE TOTAL	13.4	14.6	15.5	14.5

level enrollment was based upon the Fall Survey of Pupils in Membership data collection. In 1989-90, PEIMS collected individual student level data that includes a student identification number, birth year, campus, and grade level for each student. For students in grade 12, this data also includes an expected graduation date.

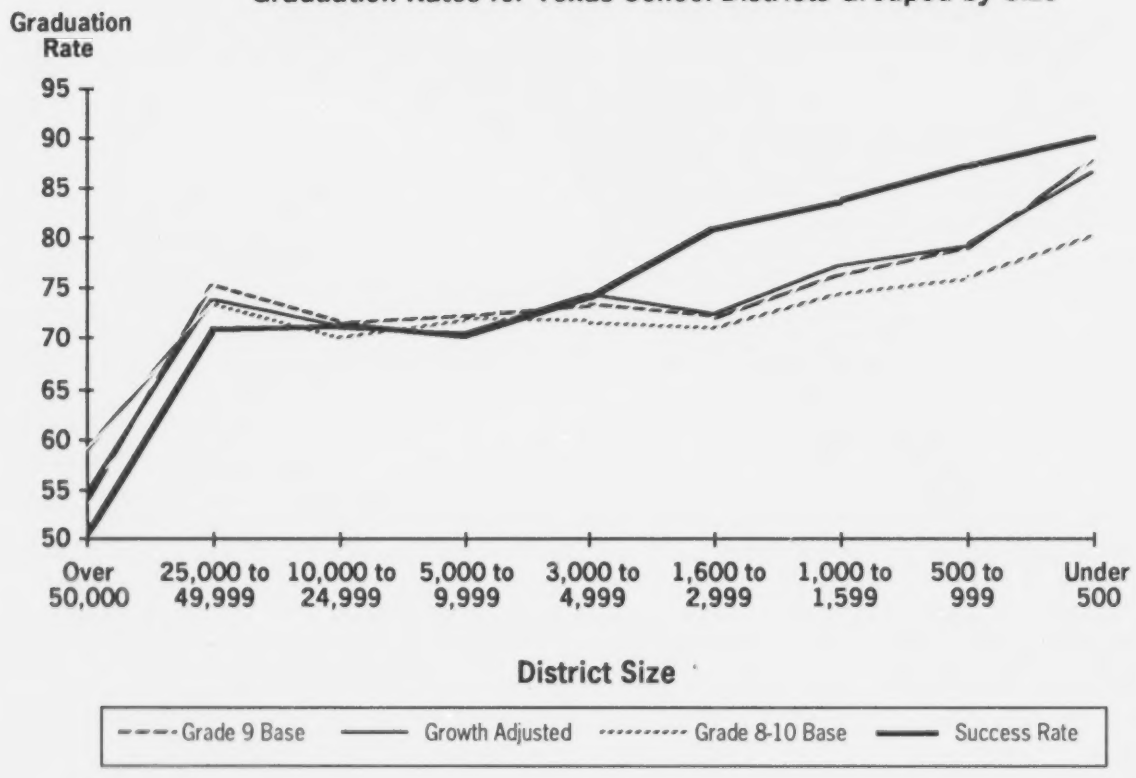
A data element for at-risk status will be collected by PEIMS for the first time in 1990-91. This element will simply indicate status. It will not specify which indicator characterizes the student as at risk. Data about students transferring from one district or school attendance zone to another will be collected by PEIMS on a voluntary basis from districts for the first time in the 1990-91 school year. After review in the spring of 1991, this data element will become mandatory.

Calculations of graduation rates must address the issue of how the base year of ninth grade student membership is calculated.

Based upon data presently collected, graduation rates are among the academic excellence indicators that will be used for the accreditation of school districts by the Texas Education Agency. Any calculation of graduation rates for purposes of evaluating campus, district, and state education systems must address the issue of how the base year of ninth grade student membership is calculated. The second issue that must be addressed is whether the graduation rate is based on an estimate that compares the number of high school graduates to the number of students enrolled in ninth grade four years earlier or on an actual calculation that tracks individual students.

In June 1990, the State Board of Education adopted the 1988-89 school year as the base year for calculation of a longitudinal dropout rate. If that same year is used as the ninth grade base for calculation of the graduation rate, then 1991-92 is the first year a graduation rate can be calculated. However, two considerations

Figure 6: Comparison of Four Methods of Calculating Graduation Rates for Texas School Districts Grouped by Size



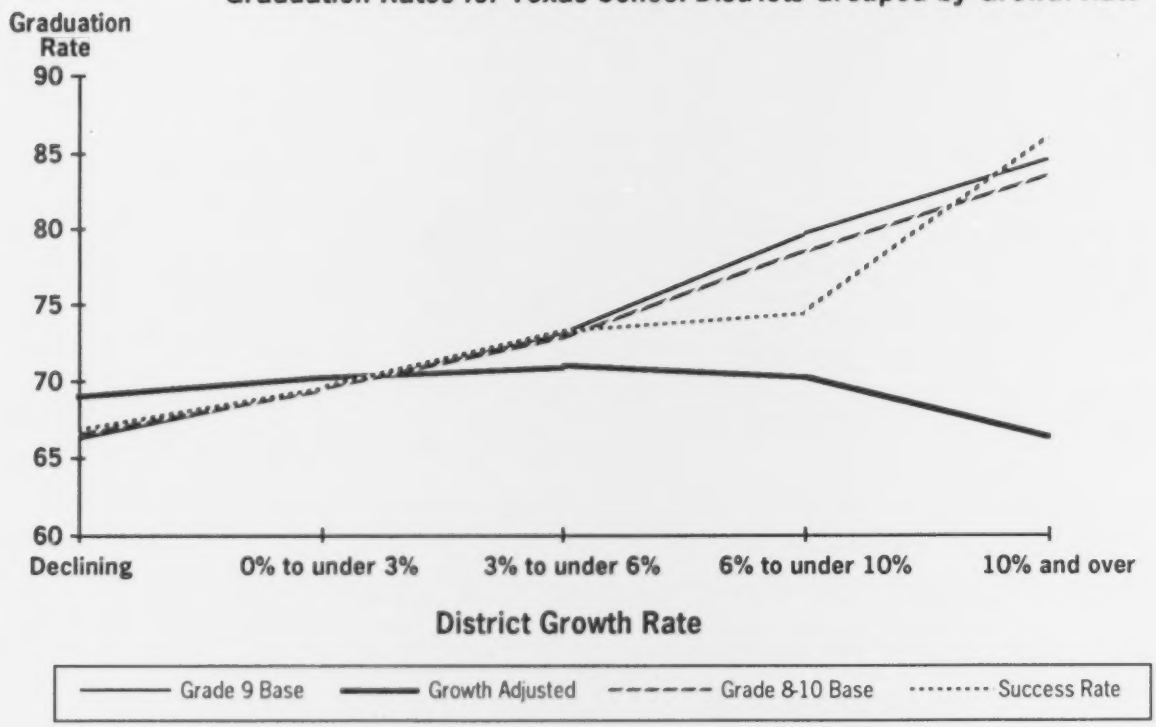
cloud this proposal. PEIMS staff indicate that the 1989-90 PEIMS data, collected in the spring of that school year, is more accurate than the 1988-89 Fall Survey of Pupils in Membership. Second, the base population will change in the 1990-91 school year as individual data is collected in the fall of the school year for the first time. Graduation rates calculated for the 1991-92 and 1992-93 school years will have to be made with the knowledge that the identified population will change through a more complete data collection procedure.

The student data collected in the 1990-91 PEIMS data collection would yield the most accurate graduation rate. Individual first-time ninth graders could be identified in the base year and followed until they graduated from high school four years later. The rate calculated from this base year data set, however, will not be available until the 1993-94 school year.

The accuracy of the graduation rate calculated from this data set will be increased with the inclusion of the number of students transferring between schools and districts. Indicating the number of transfer students will also address the legal mandate that the impact of student mobility be considered in determining campus performance indicators. Data for transfer students will not be collected from all districts for the first time until the 1991-92 PEIMS data collection. It will be available on a limited basis during the 1990-91 school year.

The accuracy of graduation rate calculations could also be increased by correcting for the bulge of ninth grade students that has been documented in Texas

Figure 7: Comparison of Four Methods of Calculating Graduation Rates for Texas School Districts Grouped by Growth Rate



schools. Using PEIMS individual student data is one way to correct graduation rate calculations for retained and overage ninth grade students. A second way of correcting for these ninth grade students, using currently available PEIMS data elements, is to calculate an average for the percentage of overage students moving from eighth through ninth to tenth grade. If a ninth grade class contains a greater percentage of overage students than the corresponding eighth or tenth grades, then that percentage should be excluded from the four-year graduation rate calculated from that base year. These students may eventually graduate, but they will take longer than their peers. A third method of correcting for retained and overage ninth grade students is to expand the PEIMS data element for expected data of graduation. In the *1990-91 PEIMS Data Standards*, this element is recorded for twelfth grade students. Upcoming standards could record this element for all secondary students, from the ninth through the twelfth grades.

The 1993-94 graduation rate would be the first four-year rate using individual student data. After that collection, the calculation of Texas graduation rates should be brought into line with findings from national studies (Clements, 1990; Frase, 1989) by extending the longitudinal study period from four years to six. This longer time period would accommodate the educational progress of designated secondary at-risk students who have been retained and who are not expected to graduate from high school within four years of their entry into ninth grade. It would also lead to a more equitable comparison for

The 1993-94 graduation rate would be the first four year rate calculated using individual student data.

TABLE 5: Graduation Rates Based on 1989-90 Texas High School Graduates, Standardized to 70.0 for Comparison

Number of Districts and ADA Groupings		Grade 9 Base	Grade 9 Growth Adjusted	Average Grade 8-10 Base	Success Rate 1988-89
6	Over 50,000	53.7	54.7	59.0	50.7
15	25,000 to 49,999	75.2	73.9	73.5	71.0
44	10,000 to 24,999	71.5	71.1	70.2	71.4
41	5,000 to 9,999	72.3	70.6	71.9	70.1
92	3,000 to 4,999	73.3	74.4	71.6	73.9
115	1,600 to 2,999	72.0	72.4	71.0	80.9
124	1,000 to 1,599	76.3	77.3	74.4	83.7
205	500 to 999	78.9	79.4	75.9	87.1
328	Under 500	84.8	86.5	80.1	90.1
Wealth By Equal RADA Per Group					
23	Under $51,611	63.0	55.3	65.9	63.0
65	$51,611 to < $79,599	72.6	72.2	72.5	69.6
74	$79,599 to < $93,431	70.6	66.1	69.8	69.1
109	$93,431 to < $111,174	69.1	68.2	69.1	74.6
79	$111,174 to < $124,674	65.8	65.0	68.1	76.8
51	$124,674 to < $133,840	64.1	65.7	64.4	66.8
62	$133,840 to < $147,075	72.6	73.0	67.3	73.3
38	$147,075 to < $156,339	73.6	73.4	70.8	75.7
31	$156,339 to < $163,010	74.7	72.6	72.2	72.9
39	$163,010 to < $174,981	70.8	69.2	69.3	75.2
55	$174,981 to < $190,253	76.4	78.0	73.3	82.2
46	$190,253 to < $206,247	75.4	73.4	75.7	78.0
26	$206,247 to < $217,719	66.4	68.1	66.4	71.2
44	$217,719 to < $244,860	78.4	77.8	76.9	72.4
41	$244,860 to < $268,755	76.1	79.8	72.4	78.7
1	$268,755 to < $269,138	50.6	52.1	56.1	48.5
30	$269,138 to < $298,578	86.0	88.5	82.8	70.6
42	$298,578 to < $367,048	69.9	73.6	71.0	68.0
13	$367,048 to < $388,497	56.5	59.0	63.0	47.1
95	$388,497 and Over	80.3	83.6	76.2	82.7
6	Special Districts	80.6	58.8	74.9	88.6

campuses in urban districts and in those education service center regions where graduating high school students tend to be older than the state average. The inclusion of students graduating from community-based and other alternative education programs would provide an even more accurate count of Texas high school graduates and dropouts from Texas schools. As of September 1, 1991, school districts will be able to include students attending these programs in the computation of average daily attendance for funding purposes.

Graduation rates, widely used measures of school success, are among a set of school performance indicators mandated by Texas law. The most accurate graduation rate would be calculated with individual student data, accounting for transfers and following students for as long as six years, over the course of their high school careers. The first four-year graduation rate calculated from these data elements will not be available until the 1993-94 school year. Until that year, two options should be considered for calculating estimated graduation rates. The first compares the number of graduates to the ninth grade membership four year earlier. The second option builds a four year longitudinal graduation rate upon available individual student data, calculating the number of 1990-91 graduates as a percent of all twelfth graders in that year, 1991-92 graduates as a percent of entering eleventh graders in 1990-91, 1992-93 graduates as a percent of students entering tenth grade in 1990-91, and 1993-94 graduates as a percent of 1990-91 first-time ninth graders.

TABLE 5: Graduation Rates Based on 1989-90 Texas High School Graduates, Standardized to 70.0 for Comparison (continued)

Number of Districts and APR Groups	Grade 9 Base	Grade 9 Growth Adjusted	Average Grade 8-10 Base	Success Rate 1988-89
Enroll /Wealth/ % Low Income				
177 <1K /< Avg/ <40%	82.3	82.0	79.0	90.2
174 <1K /< Avg/ >=40	78.8	81.1	75.4	86.6
93 <1K /> Avg/ <40%	82.3	85.4	78.3	87.8
72 <1K /> Avg/ >=40	84.0	86.7	79.1	88.4
90 1K to < 3K /< Avg/ <40%	75.1	76.6	73.3	82.9
84 1K to < 3K /< Avg/ >=40	71.8	71.5	71.1	79.9
41 1K to < 3K /> Avg/ <40%	78.5	79.0	76.2	85.8
25 1K to < 3K /> Avg/ >=40	70.8	74.3	70.1	79.4
64 3K to < 10K /< Avg/ <40%	72.3	73.1	71.1	74.2
37 3K to < 10K /< Avg/ >=40	67.2	65.0	67.2	68.8
35 3K to < 10K /> Avg/<40%	77.1	76.4	74.5	77.5
4 3K to < 10K /> Avg/ >=40	61.6	64.6	61.3	48.3
22 >10K /< Avg/ < 40%	73.8	71 8	72.1	73.9
20 >10K /< Avg/ >=40	62.8	59.4	63.9	63.7
19 >10K /> Avg/ < 40%	81.1	84.8	79.0	74.7
7 >10K /> Avg/ >=40	54.1	56.1	58.9	49.5
6 Special Districts	80.6	58.8	74.9	88.6
RADA Change: 88/89-89/90 (State Average = 1.57%)				
420 Declining RADA	66.3	69.0	66.7	67.0
298 0% to Under 3%	69.6	70.3	69.6	69.7
156 3% to under 6%	73.2	71.0	72.9	73.3
61 6% to under 10%	79.7	70.2	78.5	74.5
35 10% and Over	84.6	66.2	83.5	85.9
Percent Minority Pupils (State Average = 49.70%)				
92 Under 5%	80.5	83.4	76.9	83.7
115 5% to Under 10%	77.8	79.4	77.0	81.3
185 10% to Under 20%	79.5	79.5	76.5	80.9
137 20% to Under 30%	78.3	80.4	75.2	74.7
218 30% to Under 50%	75.0	76.6	72.8	76.9
223 50% and Over	62.2	60.8	64.5	61.8
970 STATE TOTAL	70.0	70.0	70.0	70.0

TABLE CATEGORY DEFINITIONS

Average Daily Attendance (ADA) Groupings
Districts are grouped into these nine size categories according to their refined average daily attendance (RADA) for the year. Refined ADA is collected for four weeks each semester on the Superintendent's Report of Pupil Attendance and Contact Hours, Table I. Refined ADA is calculated by totalling attendance for the best, or highest, four weeks and dividing by four.

District Type
Districts are classified on a scale ranging from major urban to rural. Factors such as size, growth rates, and proximity to urban areas are used to determine the appropriate group. This category was revised beginning with the 1986-87 school year. Since 1986-87, districts have been re-evaluated each year regarding their district type classification.

Property Wealth
Wealth is defined as total taxable property value per refined ADA and is used as an indicator of a district's ability to raise local funds. The property value used is taxable value (for the previous school year) as determined by the State Property Tax Board (SPTB). Districts are classified into 20 categories with approximately equal numbers of students in each. The six special statutory districts form a separate group in all three categories because they have no taxable property wealth.

APR Groups
This category splits the districts into 16 categories by size of enrollment, whether they are above or below the state average for district wealth, and whether they fall above or below a level of 40% low income. The six special districts form a 17th category because they cannot be categorized by wealth. These 16 categories are used to group data provided in the Annual Performance Report so that each district's values can be compared to a group of districts with similar characteristics.

Education Service Center (ESC) Region
The state is divided into 20 geographic regions, each served by an Education Service Center.

Refined ADA Change From Prior Year (RADA)
This category looks at the growth or decline in student population over a one year period. Districts whose refined ADA declined represent one grouping, while the remaining groups show one year growth rates ranging from "0 – 3%" to "10% and Over."

Percent Black, Hispanic, and Minority Students
In these categories, districts are grouped according to the ethnic composition of their student populations. The Fall Survey of Pupils in Membership, a one day head count taken in the fall of each school year, is the source for this information. Minority percent is calculated as the sum of all non-white populations expressed as a percent of the total. Each of these categories has six subcategories with the particular population ranging from "Less than Five Percent" to "50 percent and Over." •

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Document #NE1 500 001

May 1991